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Title: Cameroon off-grid solar power generation system

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Is solar energy a viable energy source in Cameroon?

The mean annual daily global solar irradiation is about 5.2 kWh/m²/day with peak sun hours of about 5 h per day thus, making solar energy a promising energy source. Cameroon has many small-scale to large-scale rivers with the potential for power production especially in remote areas .

Is a hybrid power system possible in Cameroon?

The study presents a hybrid power system involving a hydroelectric, solar photovoltaic (PV), and battery system for a rural community in Cameroon. The optimization of the system was done using HOMER Pro and validated using a meta-heuristic algorithm known as genetic algorithm (GA). The GA approach was programmed using the MATLAB software.

Why does Cameroon need a solar power system?

These properties can be used in the compensation of the fluctuating solar PV output and hence, supply stable electricity to users. Cameroon's location around the equator in West Africa and its tropical climate expose it to sufficient global solar insolation with a GHI ranging between 4.9 kWh/m²/day and 5.8 kWh/m²/day.

Can hybrid off-grid systems solve the rural electrification challenge in Cameroon?

This study contributes to the existing gap regarding hybrid off-grid systems in Cameroon by assessing their feasibility and sustainability in solving the rural electrification challenge, as well as illustrating how the cost of energy could be drastically reduced with the generation of power from more small hydroelectric plants.

May 1, 2019 · In another work using HOMER software [30] to simulate an off-grid generation options for remote villages in Cameroon to fulfil 110 kWh/day and 12 kWp loads based on the ...

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